

Medical Radiation

ALTHOUGH most of its program was given to papers on diagnosis and therapy, the 1958 meeting of the American Roentgen Ray Society in Washington, D. C., opened September 30 with talks on radiation hazards. Dr. Robert R. Newell, U. S. Naval Radiological Defense Laboratory, San Francisco, evaluated clinical exposure, saying, "It is not sensible to stop using diagnostic methods of obvious value for fear of radiation injuries that are unobservable among the ordinary vicissitudes of life. The common-sense solution is to amend the techniques." He recommended that radiologists "tighten up the techniques, starting at the high end, and at the same time undertake more popular education, starting at the low end." He also said it is necessary to get people to stop holding their breath over radiology and to get radiologists "to pant a little bit while they chase around and clip off the needless margins of their diagnostic exposures."

The role of the radiologist as a citizen, with respect to public exposure, was expounded by Dr. George Tievsky, clinical instructor in radiology, George Washington University School of Medicine, Washington, D. C. So that existing knowledge may be applied to the minimization of radiation hazards in clinical practice, he recommended that local radiological groups distribute a questionnaire based on Handbook 60 of the National Committee on Radiation Protection to determine the current pattern of radiation management. He reported that such a survey conducted by the section on radiology in the District of Columbia Medical Society had a good educational effect and also brought out opportunities for improving techniques.

Tievsky urged support of the educational program of the American College of Radiology, described below, to minimize radiation hazards at the hands of others than the trained radiologist. This recommendation raised the question

of consideration by the medical profession of standards of experience and performance for general practitioners and others employing radiation. He also discussed applying Handbook 60 standards to all fluoroscope and X-ray installations and the mastery by radiation users of the fundamentals of biology and dosage given in Handbook 59 (NCRP).

During the meeting, Dr. Barton R. Young, president of the American Roentgen Ray Society, on a national television program, expressed the need to allay hysterical public fears of legitimate X-ray uses in diagnosis and therapy. He emphasized the fact that under proper professional supervision certain parts of the body may be exposed to X-ray repeatedly without exceeding prudent limits. He also emphasized that there is no need to be apprehensive of genetic damage in patients who are unlikely to become parents.

Among the scientific exhibits at the conference was one devoted to elements of radiation protection, sponsored by Drs. Richard E. Petersen, Julius Baron, Bartis M. Kent, and Titus C. Evans, Veterans Administration Hospital, Iowa City. Prominently displayed in this exhibit was a photograph (see page 37) of a memorial to radiation martyrs of all nations at St. George's Hospital, Hamburg, Germany. Unveiled April 4, 1936, the monument has the names of 197 persons, including physicists, technicians, and nurses. More names are to be added. Visitors to the exhibit were given a mimeographed Primer on Radiation Hazards for Physicians, produced in collaboration with the radiation research laboratory and department of internal medicine in the Medical College of Iowa.

Coincident with the meeting of the American Roentgen Ray Society, the American College of Radiology reported on its educational activities. These activities are guided by a prin-



Radiation Martyr Memorial, Hamburg, Germany

principle reaffirmed by Dr. Wendell G. Scott, professor of clinical radiology, Washington University School of Medicine, St. Louis, at a session of the American Medical Association meeting, June 1958, in San Francisco. Scott said, "No matter what the present average gonadal dose in X-ray examinations is, it is too high if it can be lowered."

The policy of the college was outlined in 1956 in the following statement:

"The American College of Radiology will cooperate with all efforts to encourage medical authorities of this country to initiate a vigorous movement to reduce radiation exposure from X-rays to the lowest limit consistent with medical wisdom, and in particular that they take steps to assure that proper safeguards always be taken to minimize the radiation dose to reproductive cells. Radiologists spend long periods in special training and in acquiring ex-

perience to foster judgment in the use of radiations.

"Appropriate training and experience must be insisted upon for all users of radiation. For all, adequate stress must be placed on protection and safety aspects of the use of radiations in human beings. . . . Certain it is that we all desire to keep the dose of radiation to its lowest level to the population that is well. The dose of radiation to those who are ill and require either studies or treatment with radiation should also be kept as low as possible, but here the conditions for judgment are different. In this case, we give as little radiation as possible in order to achieve the desired end of proper diagnosis or treatment; but when, in a careful radiologist's judgment, an individual patient requires a dose exceeding 10 roentgens or any other arbitrary figure, his medical judgment must prevail. One way of keeping diagnostic

dosage to a minimum is to make every effort to have a given examination done right the first time. It should be emphasized that genetic considerations do not apply to patients who are past the reproductive period or who die without issue after receiving radiation."

The National Committee on Radiation Protection and the International Commission on Radiation Protection have for many years formulated the standards for protection of patients, the public, and personnel engaged in medical diagnostic procedures. So that the entire medical profession be acquainted with such recommendations and with basic information on the physical, radiobiological, genetic, and radiological aspects of the medical use of X-ray, including knowledge of the proper indication for X-ray examinations and the most effective way of performing them, the American College of Radiology has undertaken dissemination of this information to everyone engaged in the healing arts.

Lectures, symposiums, and panel discussions on these subjects have been sponsored by the college at the meetings of local, State, and national medical organizations. These are conducted by experts in radiation physics, radiobiology, genetics, and radiology. The lectures and discussions are published in medical journals, and reprints are distributed to the medical profession by the thousands.

The college has prepared and distributed a Practical Manual on the Medical and Dental Use of X-Rays With Control of Radiation Hazards to 175,000 practicing physicians in the United States. This manual contains basic information brought out by the National Academy of Sciences and the United Nations as well as practical clinical recommendations. It was also sent to all editors of county, State, and national journals. Another 30,000 copies will be distributed to all interns and resident physicians.

Sets of colored slides illustrating the control of the hazards of radiological examinations and explaining the most exact methods of radiographic examinations have been prepared by the college and are available to any physician

who requests them. Several hundred of these slide sets are in use, and new ones are sent out nearly every day for medical groups.

A protection kit has been designed by the college for the same application. It includes reprints of important lectures and papers, with a prepared lecture to help radiologists and other physicians talk on this subject before medical groups. More than 1,000 of these kits have been distributed.

A documentary motion picture film for the medical profession about radiation protection and the proper use of radiological procedures is being financed in part by the college, with support by a grant of \$65,000 from the Rockefeller Foundation.

The objectives of these educational efforts are to:

1. Develop a calm and mature attitude toward the nuclear era, an era that holds great promise for the betterment of mankind.

2. Put an end to unwarranted concern about medical radiation and stop confusion between it and thermonuclear warfare, the latter's massive or chronic whole body irradiation, and occupational exposure to radiation.

3. Have every physician using diagnostic radiology exert positive efforts to keep radiation dosage to the gonads to the lowest level consistent with the best standards of medical practice.

4. Achieve recognition of the fact that radiation to the germinal tissues can be reduced in some instances by 75 to 85 percent without impairing the efficiency of diagnostic examinations and achieve this reduction universally within a short time.

5. Gain realization that the key to implementing the safe use and control of medical radiation lies in the education of all practicing physicians in the fundamentals of genetics, radiobiology, and radiology.

The American College of Radiology is the official spokesman for organized radiology in relations with other organizations, and its principal interest is the socioeconomic aspects of radiological practice. It maintains close liaison with the scientific radiological societies such as the American Roentgen Ray Society.